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STATE DOCUMENTS

JOB COMPLETION REPORT

INVESTIGATIONS PROJECT

State of Montana

Name Wildlife Investigations-District 1 through 7

Project Nos. W-71-R-11 through W-77-R-11

Title Waterfowl Breeding Ground Survey

Job No. C-1

Period Covered May 1, 1965 through July 25, 1965

Introduction

A major change was initiated this year in conducting the migratory Waterfowl Breeding Ground Survey in Montana. For the past sixteen years the entire survey was conducted by personnel of the Montana Fish and Game Department. This year, the surveys for duck populations and production were conducted by the U. S. Bureau of Sport Fisheries and Wildlife. Another change was the extent of coverage. In the past, the area sampled was north and/or west of the Missouri River with trend areas in the unglaciated prairie. This year the survey was expanded to include all of eastern Montana, excluding the mountain areas. East and west transects were flown and identified by eighteen mile segments.

A copy of the report covering the breeding population of ducks is appended to this report.

The aerial breeding population and production trend surveys of Canada geese were conducted in the Hi-Line, East Slope and Helena Units in the same manner as in previous years. In the Flathead Valley Unit, ground counts were made as in the past.

Weather and Water Conditions

Due to a severe winter and late spring break-up the migration of waterfowl were somewhat retarded. This appeared to be about two weeks in most areas of the state.

Because of heavy snow cover in the eastern part of the state the water conditions were greatly improved over last year. This condition has prevailed because of above normal rainfall in June and July. Hansen's report shows a break down of the type and distribution of water areas in eastern Montana.

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Breeding Populations

Because of the change in the surveys this year, it is difficult to compare the data with previous years. Considering the total number of ducks in comparable breeding areas in Montana, there appeared to be a 85% increase over that of last year, which at that time was slightly higher than the fifteen year average. This could be one of the largest breeding populations of ducks that have ever been present in the state.

Production

The production survey scheduled to be flown by the Bureau of Sports Fisneries and Wildlife was not completed so no quantitative data are available.

Considering the continued improvement in water conditions through the month of June and July brooding conditions should be optimum. The fall flight from the Central Flyway portion of Montana should be one of the best in years.

In the Pacific Flyway (Flathead Valley) the production and brooding conditions were above average.

Goose Surveys

Hi-Line Unit: The Canada goose trend census during the early nesting season again indicates an increase in breeding birds over last year (table 1).

The production trend in this unit was increased over last years but was surprisingly low considering the increase in the earlier census of adults (table 2). No explanation is evident other than the possible effect of the retarded spring break-up.

East Slope Unit: The population trend during the nesting season was about the same as last year (table 3).

The prdocution trend for this unit showed improvement over the last two years (table 4). This increase was accentuated over last year because of the flooding in the area. There was some flooding on Tiber Reservoir, in the Willow Creek arm, due to a change in the management plan and a resulting increase in the operating elevation of the reservoir.

Helena Unit: The population trend during the nesting season remained unchanged from the previous year (table 5).

The production trend in this unit is down from last (table 6). The production in this unit is the lowest recorded since the surveys were started in 1959.

Flathead Valley Unit: The breeding population and production for this unit remained unchanged from last year but is down somewhat from peak years.

	1961	1962	1963	1964	1965
No. Goslings	577	448	357	358	365

Summary

1. A major change was made in the conducting of the survey and in the survey area.
2. The water condition again showed improvement.
3. The breeding population was up 85% over last year and was considerably above the 15 year average.
4. No duck production surveys were conducted but conditions are considered excellent for production and brooding, possibly producing one of the largest fall flights in history from eastern Montana.
5. Canada goose production in the East Slope and Hi-Line Units showed improvement over last year where the production in the Helena Unit was down and the Flathead Unit remained unchanged.

Prepared by Dale Witt

Approved by Wynn Freeman

Date July - 1965

Table 1. Canada Goose Population Trend During Nesting Season, Hi-Line Unit - 1963-1964-1965.

	1963				1964				1965			
Area	P	S	G	T	P	S	G	T	P	S	G	T
Bowdoin Lake	112	44	6	274	106	17	21	250	182	17	10	391
Lakeside Marsh	43	3	24	113	61	0	15	137	64	8	7	143
Dry Lake	28	11	7	74	17	5	3	42	51	9	3	114
Nelson Res.	87	14	0	188	59	9	13	140	78	12	3	171
Maka Lake	1	0	0	2	9	0	0	18	6	0	0	12
Area # 7	4	0	0	8	3	0	0	6	1	1	0	3
Martin's Lake	0	0	0	0	0	0	0	0	0	0	0	0
Area # 8	46	5	0	97	55	0	0	110	44	5	0	93
Horseshoe Lake	2	1	0	5	0	0	0	0	0	1	0	1
Whitewater Res.	60	17	0	146	106	5	0	217	50	3	11	114
Pea Lake	5	0	0	10	0	0	0	0	0	0	0	0
Res. # 43	1	0	0	2	0	1	0	1	0	0	0	0
Res. # 95	0	0	0	0	1	0	0	2	0	0	0	0
West Alkalie Res.	22	6	0	50	45	4	0	94	35	7	0	77
Res. # 161	4	3	3	14	18	1	0	37	9	0	0	18
Wildhorse Res.	9	1	0	19	0	0	9	9	15	2	0	32
Ester Lake	11	2	22	46	28	1	25	82	8	3	0	19
Little Warm Res.	22	0	15	59	5	1	0	11	13	5	0	31
Veseth's Res.	3	9	0	15	6	1	0	13	15	4	0	34
Hands Res.	9	7	0	25	2	4	7	15	5	3	0	13
Little Nelson Res.	3	3	0	9	8	0	0	16	4	0	0	8
Wiegand's Res.	12	8	36	68	15	1	27	58	43	6	0	92
Res. # 17	15	4	0	34	20	5	0	45	34	3	0	71
B. R. 12	10	3	0	23	20	0	0	40	0	4	0	4
North Chinook Res.	51	8	9	119	111	5	16	243	123	15	0	261
McClaren's Res. # 1	0	2	0	2	3	1	0	7	2	0	0	4
McClaren's Res. # 2	11	2	0	24	0	0	0	0	4	1	0	9
Hewitt Lake	4	2	3	13	3	2	0	8	2	0	0	4
Totals	575	155	134	1439	701	63	136	1601	788	109	34	1719

P-Pairs
S-Singles
G-Groups
T-Total

Table 2. Canada Goose Production Trend Survey, Hi-Line Unit, 1963-1964-1965.

	1963				1964				1965			
Area	NB	A	Y	T	NB	A	Y	T	NB	A	Y	T
Bowdoin Lake	32	185	441	658	16	53	138	207	13	66	142	221
Lakeside Marsh	27	55	181	263	6	22	44	72	0	25	81	106
Dry Lake	4	20	50	74	0	0	0	0	10	32	74	116
Nelson Res.	15	65	178	258	4	20	54	78	0	43	105	148
Maka Lake	0	4	12	16	0	0	0	0	0	7	16	23
Hewitt Lake	0	10	27	37	0	2	6	8	0	0	0	0
Area # 7	0	0	0	0	0	8	18	26	0	4	8	12
Area # 8	4	52	153	209	0	16	20	36	0	32	128	160
Martins Lake	0	0	0	0	0	0	0	0	0	0	0	0
Horseshoe Lake	0	0	0	0	0	0	0	0	0	0	0	0
Whitewater Res.	72	42	94	208	14	12	26	52	0	19	60	79
Pea Lake	0	0	0	0	0	0	0	0	0	0	0	0
Res. # 43	0	2	3	5	0	0	0	0	0	0	0	0
Res. # 95	0	0	0	0	0	0	0	0	0	0	0	0
West Alkalie Res.	0	20	79	99	0	3	6	9	10	9	26	45
Res. # 161	0	16	41	57	1	2	5	8	0	9	15	24
Wildhorse Res.	3	32	73	108	1	0	0	1	8	16	45	69
Ester Lake	16	0	0	16	0	0	0	0	0	4	15	19
Little Warm Res.	17	12	26	55	1	2	12	15	0	6	25	31
Veseth's Res.	8	12	34	54	6	12	20	38	5	16	38	59
Hands Res.	0	6	10	16	0	2	6	8	0	4	9	13
Little Nelson Res.	7	38	95	140	0	6	24	30	22	10	30	62
Wiegand's Res.	6	36	104	146	0	14	30	44	17	22	56	95
Res. # 17	2	24	61	87	0	2	5	7	0	30	59	89
B. R. 12	0	12	45	57	0	0	0	0	0	4	9	13
North Chinook Res.	12	76	250	338	10	68	161	239	0	72	180	252
McClaren's Res. # 1	0	35	87	122	0	0	0	0	3	4	10	17
McClaren's Res. # 2	17	14	35	66	0	6	12	18	0	4	9	13
Totals	242	768	2079	3089	59	250	587	896	88	438	1140	1666

A-Adult with young
Y-Young
NB-Non or unsuccessful breeders
T-Total

Table 3. Canada Goose Population Trend During Nesting Season, East Slope Unit.

	1963				1964				1965			
Area	P	S	G	T	P	S	G	T	P	S	G	T
Willow Creek Res.	2	6	0	10	9	1	5	24	1	4	0	6
Pishkun Res.	9	7	11	36	5	2	12	24	8	1	0	17
Bynum Res.	3	0	0	6	4	0	6	14	8	2	0	18
Alkali Lake	31	8	13	83	22	1	0	45	30	7	0	67
Freezout Lake	26	1	0	53	24	1	3	52	26	3	5	60
Lake Francis	10	1	0	21	3	1	0	7	6	2	0	14
Tiber Res.	34	11	33	112	48	14	0	110	47	8	40	142
Marias R. West1/	14	10	22	60	25	12	0	62	14	3	6	37
Marias R. East2/	45	17	12	119	45	20	11	121	33	19	25	110
Totals	174	61	91	500	185	52	37	459	173	49	76	471

1/ Marias River west includes that area from the head of the Reservoir to the highway bridge, south of Shelby.

2/ Marias River east is from Tiber Dam to its confluence with the Missouri River.

P-Pairs
S-Singles
G-Groups
T-Total

Table 4. Canada Goose Production Trend Survey, East Slope Unit.

	1963				1964				1965			
Area	NB	A	Y	T	NB	A	Y	T	NB	A	Y	T
Willow Creek Res.	0	4	10	14	0	6	19	25	2	6	17	25
Pishkun Res.	21	6	25	52	48	10	24	82	47	12	32	91
Bynum Res.	61	6	14	81	8	0	0	8	3	20	34	57
Alkali Lake	47	10	36	93	41	0	0	41	51	16	45	118
Freezout Lake	58	24	111	193	96	6	87	189	36	32	75	143
Lake Francis	28	0	0	28	0	0	0	0	12	6	25	43
Tiber Res.	101	37	80	218	31	34	120	185	13	39	76	128
Marias R. West 1/	57	12	27	96	2	0	0	2	0	2	6	8
Marias R. East 2/	0	6	14	20	0	6	15	21	0	24	66	90
Totals	373	105	317	795	226	62	265	553	164	157	376	703

1/ Marias River west included that area from the head of Tiber Reservoir to the highway bridge south of Shelby.

2/ Marias River east is from Tiber Dam to its confluence with the Missouri River.

NB-Non or unsuccessful breeder
A-Adult with young
Y-Young
T-Total

Table 5. Canada Goose Population Trend During Nesting Season, Helena Unit 1/.

	1964				1965			
Area	P	S	G	T	P	S	G	T
Canyon Ferry Res. 1/	23	11	11	68	19	12	31	81
Missouri River 2/	13	6	0	32	6	2	9	21
Lake Helena	26	14	6	72	21	4	38	84
Totals	62	31	17	172	46	18	76	186

1/ Because of low water levels in Canyon Ferry Reservoir in the spring of 1965 the count may be abnormally low and would not be comparable with future years.

2/ Townsend bridge to Toston Bridge.

Table 6. Canada Goose Production Trend Survey, Helena Unit.

	1964				1965			
Area	NB	A	Y	T	NB	A	Y	T
Canyon Ferry Res.	16	76	200	292	25	54	135	214
Missouri River 1/	0	0	0	0	0	6	16	22
Lake Helena	15	51	99	165	0	34	76	110
Totals	31	127	299	457	25	94	227	346

1/ Towsend bridge to Toston Bridge.

NB-Non or unsuccessful breeder
A-Adult with young
Y-Young
T-Total

APPENDIX

MONTANA WATERFOWL SURVEY

By Henry A. Hansen

An operational waterfowl population survey was established for eastern Montana in May of 1965. This was patterned after J. D. Smith's 1958 experimental survey south of the Missouri River and continued north of the Missouri River in conformity with the established pattern in adjacent Alberta, Saskatchewan, and North Dakota. The aerial survey conducted by the Montana Department of Fish and Game north of the Missouri River the past few years will be replaced by the standard operation initiated in 1965.

Area and methods

Eastern Montana falls into two natural ecological units divided by the Missouri River. These have been designated as stratum A-South and B-North. The standard sampling plan was used with east-west transects divided into 18-mile segments. All transects start with segment #1 on the eastern border of Montana. The transects are lettered consecutively from A through L, south to north, starting at 45°30' north latitude and extending to the Canadian border. Stratum A-South, 40,500 square miles in extent was sampled with 80 segments of 18-miles each. Stratum B-North, 33,000 square miles was sampled with 113 segments.

Water and habitat conditions

Following a severe winter with heavy snow the water conditions were good to excellent. Spring was about 2 weeks later than normal, but having arrived, accelerated at a fast rate. The rapid appearance of lone drakes indicated that the late spring did not have an adverse affect on the progression of the nesting season. Heavy rains the first week in May completed filling many stock dams and potholes that had not been previously filled from snow melt. This rain also created much temporary sheet water in wheat stubble north of the Missouri River. These shallow ponds, which covered shattered wheat from the last harvest, were very attractive to ducks of many species, particularly pintail and mallard deserter males. Therefore, a disproportionately high percentage of ducks were counted on water that would be present no more than a week or two unless heavy rains continued.

Population indexes

Stratum A-South had a mean density of 6.3 ducks per square mile for a breeding population index of 256,000. Mallards comprised 67 percent, pintails 15 percent, blue-winged teal 5.7 percent, gadwall 4 percent, and several lesser species the remainder.

Stratum B-North had a mean density of 14.3 ducks per square mile for a breeding population index of 471,000. In this area pintails were most abundant, 35 percent, followed by mallards 31.3 percent, gadwall 12.6 percent, shoveler 6 percent, and blue-winged teal and widgeon 5 percent each (tables 1 and 2).

Discussion

All water areas were recorded by the pilot within a one-eighth mile strip as to type and permanency. Four categories were designated: (1) stock dam, (2) natural pothole or lake (included temporary sheet water), (3) stream and (4) dugout. These were judged to be (a) permanent (lasting through summer), (b) semi-permanent (lasting until majority of broods are fledged) and (c) temporary (lasting no longer than mid-June). All duck use was recorded by water type and permanency (tables 3a and 3b). Each time a stream was intercepted within the survey strip it was recorded. Thus, if the same stream meandered back and forth across the transect it was counted as often as interdicted. If a stream ran continuously within the eighth-mile strip for a quarter or half mile it was counted only once, however.

In both strata dugouts are not numerous enough to be of great significance. The occurrence of streams is relatively the same in both areas. Stock dams in stratum A-South are almost twice as dense as they are north of the Missouri River. Conversely, both potholes in B-North are four times as dense as they are south of the river (table 4).

As one would suspect, permanent potholes and lakes had a much higher preference rating by ducks than any other type of water. Semi-permanent and temporary potholes south of the river were much less attractive than they were in the north stratum, however. Permanent stock dams were somewhat more attractive in the south where there were fewer natural bodies of water than there were in the north, but properly built stock dams throughout the range land were readily used by many species.

The ratio of stock dams to semi-permanent and temporary streams in A-South was roughly 2:1 whereas the ratio in B-North was 1:1. In other words, streams suitable for building small, simple stock dams are more completely utilized south of the Missouri River than they are north. Yet there is still adequate drainage to build an average of at least two more stock dams per each three square miles in both strata. Development of this program to its maximum would be of immediate benefit to both the livestock industry and to waterfowl.

Table 1. Summary, Waterfowl Breeding Population Survey, Montana, 1965.

	Stratum		
	A-South	B-North	Total
Area (sq. mi.)	40,500	33,000	73,500
Sample (sq. mi.)	326.5	412	738.5
Population index:			
Ducks per sq. mile	6.3	14.3	
Total ducks	256,000	471,000	727,000

Table 2. Waterfowl Breeding Population Index, Montana, 1965
(Index numbers in thousands)

Species	Stratum		Total
	A-South	B-North	
Ducks:			
Dabblers:			
Mallard	172.5	147.5	320.0
Gadwall	10.0	59.5	69.5
Widgeon	6.0	24.5	30.5
Green-winged teal	3.0	4.0	7.0
Blue-winged teal	14.5	24.5	39.0
Shoveler	7.5	28.0	35.5
Pintail	38.0	165.5	203.5
Subtotal	251.5	453.5	705.0
Divers:			
Redhead	1.5	2.0	3.5
Canvasback	--	2.0	2.0
Scaup	2.5	11.5	14.0
Ring-necked duck	0.5	1.0	1.5
Bufflehead	trace	0.5	0.5
Ruddy duck	--	trace	trace
Subtotal	4.5	17.0	21.5
Miscellaneous:			
Merganser	trace	0.5	0.5
Grand total	256	471	727

Table 3a. Waterfowl Use by Water Type, Montana, Stratum A-South, 1965.

Water type (Recorded on 162 q. mi. of habitat)	Times water type observed		Waterfowl observed		Preference rating
	Number	Percent	Number	Percent	% waterfowl + % water type
1. Stock dams:					
a. Permanent	136	30.6	340	52.3	1.71
b. Semi-permanent	29	6.5	70	10.8	1.66
c. Temporary	18	4.2	6	0.9	0.21
2. Pothole and Lake:					
a. Permanent	20	4.5	92	14.1	3.13
b. Semi-permanent	15	3.4	6	0.9	0.26
c. Temporary	32	7.2	24	3.6	0.50
3. Streams:					
a. Permanent	91	20.5	63	9.7	0.47
b. Semi-permanent	53	11.9	28	4.3	0.36
c. Temporary	45	10.2	20	3.1	0.30
4. Dugout:					
a. Permanent	1	0.2	2	0.3	1.50
b. Semi-permanent	2	0.4			0.00
c. Temporary	2	0.4			0.00
Total	444	100.0	651	100.0	

Table 3b. Waterfowl Use by Water Type, Montana, Stratum B-North.

Water type (Recorded on 209 Sq. mi. of habitat)	Times water type observed		Waterfowl observed		Preference rating
	Number	Percent	Number	Percent	% waterfowl ÷ % water type
1. Stock dams:					
a. Permanent	103	13.6	326	14.0	1.03
b. Semi-permanent	15	2.0	78	3.3	1.65
c. Temporary	26	3.4	22	0.9	0.26
2. Pothole and lake:					
a. Permanent	78	10.3	834	35.7	3.46
b. Semi-permanent	37	4.9	151	6.5	1.33
c. Temporary	248	32.8	650	27.9	0.85
3. Streams:					
a. Permanent	96	12.7	177	7.6	0.60
b. Semi-permanent	50	6.6	46	1.9	0.29
c. Temporary	95	12.5	38	1.6	0.13
4. Dugout:					
a. Permanent	2	0.2	6	0.3	1.50
b. Semi-permanent	3	0.4	2	0.1	0.25
c. Temporary	5	0.6	4	0.2	0.33
Total	758	100.0	2,334	100.0	

Table 4. May Water Index, Montana, 1965.

Type	A-South		B-North	
	Frequency (per sq. mi.)	Total number	Frequency (per sq. mi.)	Total number
Stock dam	1.13	45,765	0.69	13,770
Pothole	0.41	16,605	1.74	57,420
Stream[1]	1.16	46,980	1.15	37,950
Dugout	0.03	1,215	0.05	1,650
Total	2.73	110,565	3.63	110,790

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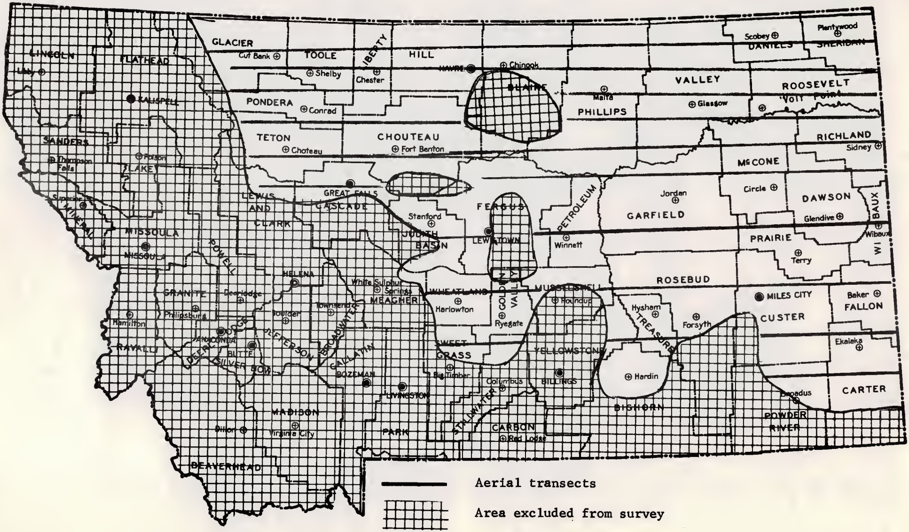
[1] Of the streams encountered, 0.60 per sq. mile in stratum A-South and 0.70 in stratum B-North were of the semi-permanent and temporary variety suitable for the construction of stock dams.

Figure 1. Montana Waterfowl Populations Survey.


LINCOLN
Libby
FLATHEAD
KALISPELL
GLACIER
Cut Bank
TOOLE
Shelby
LIBERTY
Chester
HILL
HAVRE
Chinook
BLAINE
PHILLIPS
Malta
VALLEY
Glasgow
DANIELS
Scobey
SHERIDAN
Plentywood
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STILLWATER
Columbus
YELLOWSTONE
BILLINGS
BIGHORN
Hardin
POWDER RIVER
Broadus
MADISON
Dillon
Virginia City
PARK
CARBON
Red Lodge
BEAVERHEAD
Aerial transects
Area excluded from survey

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The aerial breeding population and production trend surveys of Canada geese were conducted in the Hi-Line, East Slope and Helena Units in the same manner as in previous years. In the Flathead Valley Unit, ground counts were made as in the past.

Weather and Water Conditions

The precipitation during the fall, winter and spring was consistently less than the previous two years in much of the goose breeding areas. Because the major goose breeding areas are on large rivers and reservoirs the habitat did not deteriorate as much as the precipitation pattern might indicate.

The water in the Hi-Line Unit was excellent due to spring snow and rain. The only reservoir with deteriorating conditions was Whitewater Reservoir.

In the Helena Unit, Canyon Ferry Reservoir received below normal runoff due to lack of snow in the upper Missouri drainage. This reservoir was very low, creating large expanses of mud flats in the upper end and causing the geese to nest elsewhere, probably on the Missouri River.

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Canada Goose Population and Production Trend Surveys

Hi-Line Unit: The Canada goose trend during the early nesting season again indicates an increase in breeding birds over last year (Table 1).

The production trend in this unit was increased considerably over last year (Table 2). The production this year was the second highest on record, exceeded only by that in 1963.

The survey area on this unit was expanded to include reservoirs in south Valley County. The data from this area are not tabulated this year because of lack of comparative data. In this area there were 33 geese present during the early survey and 113 including 78 young, during the production survey.

East Slope Unit: The population trend during the nesting season was about the same as last year (Table 3).

The production trend in this unit again showed improvement over the last two years (Table 4).

Helena Unit: The population trend during the nesting season remained about the same as the previous year (Table 5).

The production trend for this unit is about the same as last year (Table 6). Both this year and last have been poor for Canada goose production in this unit. It may be due to the extremely low water levels in Canyon Ferry Reservoir, coupled with a high mortality rate during the hunting season.

Flathead Valley Unit: The breeding population and production for this unit is unchanged from last year but is still down somewhat from the peak years.

	1961	1962	1963	1964	1965	1966
No. Goslings	577	448	357	358	365	360

Summary

1. No duck production surveys were conducted by the state.
2. Canada goose production was improved greatly in the Hi-Line Unit. It was up slightly in the East Slope Unit and unchanged in the Helena and Flathead Units.

Prepared by: Dale Witt

Date July - 1966

Approved by: Wynn G. Freeman

Table 1. Canada Goose Population Trend During Nesting Season, Hi-Line Unit - 1964-1965-1966.

	1964				1965				1966			
Area	P	S	G	T	P	S	G	T	P	S	G	T
Bowdoin Lake	106	17	21	250	182	17	10	391	148	14	10	320
Lakeside Marsh	61	0	15	137	64	8	7	143	96	2	4	198
Dry Lake	17	5	3	42	51	9	3	114	39	2	0	80
Nelson Res.	59	9	13	140	78	12	3	171	78	12	4	172
Maka Lake	9	0	0	18	6	0	0	12	5	3	19	32
Hewitt Lake	3	2	0	8	2	0	0	4	2	1	0	5
Area # 7	3	0	0	6	1	1	0	3	2	0	0	4
Martin's Lake	0	0	0	0	0	0	0	0	2	0	0	4
Area # 8	55	0	0	110	44	5	0	93	54	4	5	117
Horseshoe Lake	0	0	0	0	0	1	0	1	0	0	0	0
Whitewater Res.	106	5	0	217	50	3	11	114	47	1	26	121
Pea Lake	0	0	0	0	0	0	0	0	0	0	0	0
Res. # 43	0	1	0	1	0	0	0	0	1	0	0	2
Res. # 95	1	0	0	2	0	0	0	0	1	0	0	2
West Alkalie Res.	45	4	0	94	35	7	0	77	25	6	0	56
Res. # 161	18	1	0	37	9	0	0	18	8	0	0	16
Wildhorse Res.	0	0	9	9	15	2	0	32	16	1	0	33
Ester Lake	28	1	25	82	8	3	0	19	12	4	6	34
Little Warm Res.	5	1	0	11	13	5	0	31	17	2	27	63
Veseth's Res.	6	1	0	13	15	4	0	34	12	6	0	30
Hands Res.	2	4	7	15	5	3	0	13	11	1	0	23
Little Nelson Res.	8	0	0	16	4	0	0	8	5	0	0	10
Wiegand's Res.	15	1	27	58	43	6	0	92	51	6	3	111
Res. # 17	20	5	0	45	34	3	0	71	35	1	3	74
B. R. 12	20	0	0	40	0	4	0	4	5	3	3	16
North Chinook Res.	111	5	16	243	123	15	0	261	122	7	28	279
McClaren's Res. # 1	3	1	0	7	2	0	0	4	5	1	0	11
McClaren's Res. # 2	0	0	0	0	4	1	0	9	8	1	0	17
Totals	701	63	136	1601	788	109	34	1719	807	78	138	1830

P-Pairs
S-Singles
G-Groups
T-Total

Table 2. Canada Goose Production Trend Survey, Hi-Line Unit, 1964-1965-1966.

Area	1964 NB	1964 A	1964 Y	1964 T	1965 NB	1965 A	1965 Y	1965 T	1966 NB	1966 A	1966 Y	1966 T
Bowdoin Lake	16	53	138	207	13	66	142	221	1	179	295	475
Lakeside Marsh	6	22	44	72	0	25	81	106	19	37	137	193
Dry Lake	0	0	0	0	10	32	74	116	0	28	56	84
Nelson Res.	4	20	54	78	0	43	105	148	2	58	151	211
Maka Lake	0	0	0	0	0	7	16	23	0	16	45	61
Hewitt Lake	0	2	6	8	0	0	0	0	0	0	0	0
Area # 7	0	8	18	26	0	4	8	12	0	0	0	0
Area # 8	0	16	20	36	0	32	128	160	0	30	167	197
Martins Lake	0	0	0	0	0	0	0	0	0	0	0	0
Horseshoe Lake	0	0	0	0	0	0	0	0	0	0	0	0
Whitewater Res.	14	12	26	52	0	19	60	79	5	12	35	52
Pea Lake	0	0	0	0	0	0	0	0	0	0	0	0
Res. # 43	0	0	0	0	0	0	0	0	0	0	0	0
Res. # 95	0	0	0	0	0	0	0	0	0	4	9	13
West Alkalie Res.	0	3	6	9	10	9	26	45	0	37	93	130
Res. # 161	1	2	5	8	0	9	15	24	0	18	45	63
Wildhorse Res.	1	0	0	1	8	16	45	69	0	22	79	101
Ester Lake	0	0	0	0	0	4	15	19	0	4	7	11
Little Warm Res.	1	2	12	15	0	6	25	31	0	18	70	88
Veseth's Res.	6	12	20	38	5	16	38	59	14	14	44	72
Hands Res.	0	2	6	8	0	4	9	13	0	10	27	37
Little Nelson Res.	0	6	24	30	22	10	30	62	0	8	18	26
Wiegand's Res.	0	14	30	44	17	22	56	95	6	39	140	185
Res. # 17	0	2	5	7	0	30	59	89	0	14	24	38
B. R. 12	0	0	0	0	0	4	9	13	0	14	40	54
North Chinook Res.	10	68	161	239	0	72	180	252	0	94	370	464
McClaren's Res. # 1	0	0	0	0	3	4	10	17	7	20	35	62
McClaren's Res. # 2	0	6	12	18	0	4	9	13	0	12	28	40
Totals	59	250	587	896	88	438	1140	1666	54	688	1915	2657

A-Adult with yonng
Y-Young
NB-Non or unsuccessful breeders
T-Total

Table 3. Canada Goose Population Trend During Nesting Season, East Slope Unit.

Area	1964				1965				1966			
	P	S	G	T	P	S	G	T	P	S	G	T
Willow Creek Res.	9	1	5	24	1	4	0	6	7	2	0	16
Pishkun Res.	5	2	12	24	8	1	0	17	9	2	0	20
Bynum Res.	4	0	6	14	8	2	0	18	3	0	0	6
Alkali Lake	22	1	0	45	30	7	0	67	19	1	5	44
Freezout Lake	24	1	3	52	26	3	5	60	50	0	25	125
Lake Francis	3	1	0	7	6	2	0	14	16	3	12	47
Tiber Res.	48	14	0	110	47	8	40	142	21	22	3	67
Marias R. West 1/	25	12	0	62	14	3	6	37	18	6	6	48
Marias R. East 2/	45	20	11	121	33	19	25	110	40	12	0	92
Totals	185	52	37	459	173	49	76	471	183	48	46	465

1/ Marias River west includes that area from the head of the Reservoir to the highway bridge, south of Shelby.

2/ Marias River east is from Tiber Dam to its confluence with the Missouri River.

P-Pairs
S-Singles
G-Groups
T-Total

Table 4. Canada Goose Production Trend Survey, East Slope Unit.

Area	1964 NB	1964 A	1964 Y	1964 T	1965 NB	1965 A	1965 Y	1965 T	1966 NB	1966 A	1966 Y	1966 T
Willow Creek Res.	0	6	19	25	2	6	17	25	0	8	20	28
Pishkun Res.	48	10	24	82	47	12	32	91	32	12	30	74
Bynum Res.	8	0	0	8	3	20	34	57	8	12	37	57
Alkali Lake	41	0	0	41	51	16	45	118	48	27	54	129
Freezout Lake	96	6	87	119	36	32	75	143	18	40	111	169
Lake Francis	0	0	0	0	12	6	25	43	7	8	25	40
Tiber Res.	31	34	120	185	13	39	76	128	61	40	80	181
Marias R. West 1/	2	0	0	2	0	2	6	8	1	2	5	8
Marias R. East 2/	0	6	15	21	0	24	66	90	0	22	49	71
Totals	226	62	265	553	164	157	376	703	175	171	411	757

1/ Marias River west included that area from the head of Tiber Reservoir to the highway bridge south of Shelby.

2/ Marias River east is from Tiber Dam to its confluence with the Missouri River.

NB-Non or unsuccessful breeder
A-Adult with young
Y-Young
T-Total

Table 5. Canada Goose Population Trend During Nesting Season, Helena Unit.

Area	1965 P	S	G	T	1966 P	S	G	T
Canyon Ferry Res.	19	12	31	81	19	18	22	78
Missouri River 1/	6	2	9	21	16	5	0	37
Lake Helena	21	4	38	84	24	12	6	66
Totals	46	18	76	186	59	35	28	181

1/ Townsend bridge to Toston bridge.

Table 6. Canada Goose Production Trend Survey, Helena Unit.

Area	1965 NB	A	Y	T	1966 NB	A	Y	T
Canyon Ferry Res.	25	54	135	214	14	42	131	187
Missouri River 1/	0	6	16	22	0	0	0	0
Lake Helena	0	34	76	110	6	32	111	149
Totals	25	94	227	346	20	74	242	336

1/ Townsend bridge to Toston bridge.

NB-Non or unsuccessful breeder
A-Adult with young
Y-Young
T-Total

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JOB COMPLETION REPORT

RESEARCH PROJECT SEGMENT

State of Montana

Name Wildlife Investigations - Districts 1-7

Project No. W-71-R-12 through W-77-R-12

Title Waterfowl Harvest Survey

Job No. C-1

Period Covered July 1, 1966 through June 30, 1967

ABSTRACT:

A mail survey of a random sample of Class A license holders was conducted following the 1966 waterfowl hunting season to determine waterfowl hunting activity and harvest.

The duck stamp sales as reported by the Bureau of Sports Fisheries and Wildlife for the period 7/1/66 to 6/31/67 was 27,100, which was about a fifteen percent increase from the previous year.

The total duck harvest was 268,578, approximately a ninety percent increase from the previous year.

The total goose harvest for 1966 was 13,989, which was up about thirty percent from the previous year.

A comparison of the harvest characteristics by counties, districts and flyways are discussed.

OBJECTIVES:

The objectives of this survey was to measure the size, distribution and species composition of the waterfowl harvest in Montana.

Selection of mailing list and sampling rates

The mailing list was composed of names taken from a random sample of the 1965 Class A license holders. The Class A license is required for hunting small game and as pre-requisite for purchase of a big game license.

The non-resident hunters were not sampled this year.

Questionnaires

The general format of the questionnaire was similar to last years.

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Pre-season contact and tally card

No pre-season contact and tally cards were mailed prior to the season. This contact was eliminated after the 1962 survey.

Post-season contact

Questionnaires were sent immediately following the end of the hunting season in the Pacific Flyway portion of the State. After an elapse of ten days, a post card reminder was sent to non-respondents. A follow-up questionnaire was scheduled to be sent to non-respondents 21 days after the original mailing to be comparable with previous surveys. But due to extenuating circumstances the follow-up questionnaire was not sent. The length of time between the original mailing and the cut-off date was 42 days, which compares with previous surveys. Because the follow-up questionnaire was not mailed the comparability of the survey between years may be biased.

Analysis methods

The data from the questionnaires were tabulated by data processing machines. Total hunters and harvest were determined by expanding on the basis of duck stamp sales and the reported seasonal bag.

FINDINGS:

The 1966 Statewide Waterfowl Harvest

Hunter Response

The response rate was down somewhat from previous years (Table 1). This may have been caused by the lack of a follow-up questionnaire this year. But looking further in Table 1, the number of useable returns were not reduced proportionatly to the response reduction.

Waterfowl Regulations

The waterfowl seasons elected in the Pacific and Central Flyway portions of Montana were as follows: Pacific - 90 day continuous duck season, from October 8 to January 5, 1967 inclusive. The daily bag and possession limit on ducks was 6. For geese, the season dates were the same as for ducks, with a bag and possession limit of six, to include not more than two dark geese and one Ross's goose. The goose season was restricted in a portion of the Pacific Flyway by state closure during the latter part of the season for protection of the resident goose population. This consisted of closing the following described area to all goose hunting December 4, 1966; beginning at the town of Ravalli thence north along U. S. 93 to Elmo, thence west and south along Highway 28 to Camas Prairie road (382), thence south along said road to Perma, thence east along U. S. 10A to Ravalli the point of beginning.

In the Central Flyway there was a 60 day continuous duck season from October 8 to December 6, 1966. The basic daily bag and possession limit was 3 and 6, to include no more of the following species than 2 and 4 wood ducks, 2 and 4 canvasbacks, and 2 and 4 mallards. The goose season was 75 days from October 1, 1966 to December 14 with a daily bag and possession limit of five, not to include more than two dark geese and one Ross's goose.

Hunter Participation

The Bureau of Sports Fisheries and Wildlife reported 27,100 migratory bird hunting stamps were sold in Montana during the period 7/1/66 to 3/31/67. This compares with 22,855 stamps sold the previous year during a similar period.

The number of active resident waterfowl hunters in 1966 was 27,419 as compared to 19,202 in 1965. This included 26,487 active duck hunters and 14,422 active goose hunters. For some unknown reason there was a large increase in the junior hunter this year. This hunter is not required to buy a duck stamp. The number of active hunters was calculated from duck stamp sales by first adjusting for the fourth quarter stamp sales, then eliminating the percentage of stamps sold to collectors and further reducing by the percentage of potential hunters who did not hunt as determined from the survey (Table 1). The number of junior hunters (those reporting hunting without a stamp) was calculated by ratio estimate and added to the total, resulting in a total number of active waterfowl hunters.

The non-resident waterfowl hunters were not sampled in 1966.

Duck Harvest

During the 1966 waterfowl season a total of 1831 resident duck hunters reported taking 18,577 ducks, for an average of 10.14 ducks per hunter. A total of 11,993 days were spent in the field by reporting duck hunters, resulting in 6.55 days per hunter for the season. Compared with last year, the hunters spent more time in the field and obtained a larger seasonal bag (Table 2).

The total duck harvest was calculated to be 268,578 ducks. This was determined by multiplying the total active duck hunters by their reported seasonal bag. This harvest compared with 139,618 ducks in 1965.

Table 2. Summary of Reported Average Active Resident Hunter Performance for 1963, 1964, 1965 and 1966.

	1963	1964	1965	1966
No. days hunted ducks	5.37	4.89	5.99	6.55
No. days hunted geese	4.36	4.69	4.71	5.11
Seasonal duck bag	8.12	7.44	7.76	10.14
Daily duck bag	1.51	1.51	1.29	1.54
Seasonal goose bag	1.35	0.95	0.98	0.97
Daily goose bag	0.31	0.20	0.20	0.19

The reported species composition of the statewide duck harvest appeared remarkably similar to that of the previous year (Table 3).

Table 3. Comparison of The Reported Species Harvest of Ducks During The 1965 and 1966 Waterfowl Hunting Season.

Species	1965 No.	1965 %	1966 No.	1966 %
Mallard	11,217	75.5	14,054	75.6
Blue-winged Teal	984	6.6	1,016	5.4
Pintail	471	3.1	706	3.8
Baldpate	264	1.7	353	1.9
Gadwall	214	1.4	309	1.6
Scaup	220	1.4	209	1.1
Shoveller	170	1.1	263	1.4
Canvasback	224	1.5	305	1.6
Redhead	52	0.3	162	0.8
Unknown	1,037	6.9	1,200	6.4
Totals	14,853		18,577	

GOOSE HARVEST

During the 1966 season a calculated total of 14,422 active goose hunters harvested a total of 13,989 geese, or .97 geese per active hunter. This was about the same success as the previous year when .98 geese were reported harvested per active hunter. An average of 5.11 days were spent in the field by active reporting goose hunters during the 1966 season. Compared with last year, the average goose hunter spent a little more time in the field and obtained a similar size seasonal bag.

The total goose harvest of all species was 13,989 in 1966, as compared with 10,501 in 1965. The increase in harvest between years is attributed to the increase in the number of hunters and also the increased availability of snow geese.

The species composition of the statewide goose harvest is shown in Table 4. The percentage of snow geese was markedly increased over the previous two years. The age ratios in the population as determined from family group counts and the census on the wintering grounds indicated a very good hatch of snow geese during the 1966 breeding season, where the previous two years a markedly poorer hatching success was experienced.

Table 4. Species Composition of The 1964, 1965 and 1966 Goose Harvest by Resident Hunters.

Species	1964 % Comp.	Total Harv.	1965 % Comp.	Total Harv.	1966 % Comp.	Total Harv.
Canada Goose	77.4	6,786	86.8	9,115	67.4	9,429
Snow Goose	18.5	1,622	9.9	1,040	25.2	3,525
White-Fronted Goose	2.5	219	0.8	84	4.9	685
Ross's Goose	1.1	96	0.3	31	1.4	196
Unknown	0.5	43	2.2	231	1.1	154
Totals		8,768		10,501		13,989

WATERFOWL HARVEST BY FLYWAYS, GAME MANAGEMENT DISTRICTS AND COUNTIES

Following is a break-down and discussion of characteristics of the 1965 and 1966 waterfowl harvest by flyways, game management districts and counties.

It should be recognized that the break-down of the harvest data by sub-divisions of the state decreases the reliability. Errors are likely to exist in the break-down of the harvest data, particularly at the county level in which there are few waterfowl hunters.

Harvest by Districts and Counties

A comparison of the 1965 and 1966 calculated duck harvest by game mangement districts are shown in Table 5.

The waterfowl seasons between the two years were more liberal in all areas during 1966.

The top five counties for duck harvest in 1966 in order of magnitude of harvest were as follows: Lake, Gallatin, Beaverhead, Flathead and Ravalli.

Table 5. Calculated Duck Harvest in Game Management Districts and Counties 1965 and 1966.

	1965 Duck Harvest				1966 Duck Harvest			
District & County	No. Duck Hunters	% of Total	No. Taken	% of Total	No. Duck Hunters	% of Total	No. Taken	% of Total
District 1								
Flathead	1,221	6.79	8,349	5.98	1,851	6.99	18,075	6.73
Lake	1,288	7.16	8,977	6.43	2,052	7.75	29,758	11.08
Lincoln	178	.99	1,340	.96	346	1.31	4,861	1.81
Sanders	206	1.15	1,884	1.35	590	2.23	5,693	2.12
Total	2,893	16.09	20,550	14.72	4,839	18.28	58,387	21.74
District 2								
Deer Lodge	318	1.77	2,959	2.12	272	1.03	3,357	1.25
Granite	158	.88	1,410	1.01	158	.60	1,342	.50
Mineral	35	.20	209	.15	42	.16	698	.26
Missoula	685	3.81	5,389	3.86	1,070	4.04	12,274	4.57
Powell	215	1.20	2,010	1.44	360	1.36	3,840	1.43
Ravalli	563	3.13	6,492	4.65	836	3.16	12,650	4.71
Total	1,974	10.99	18,469	13.23	2,738	10.35	34,161	12.72
District 3								
Beaverhead	807	4.49	9,591	6.87	1,040	3.93	19,042	7.09
Broadwater	309	1.72	3,183	2.28	317	1.20	3,706	1.38
Gallatin	1,061	5.90	10,345	7.41	1,705	6.44	22,990	8.56
Jefferson	233	1.30	1,759	1.26	317	1.20	3,491	1.30
Madison	892	4.96	10,094	7.23	852	3.22	9,534	3.55
Park	545	3.03	6,185	4.43	619	2.34	6,741	2.51
Silver Bow	8	.05	0	.00	13	.05	26	.01
Sweet Grass	93	.52	279	.20	129	.49	778	.29
Total	3,948	21.97	41,436	29.68	4,992	18.87	66,308	24.69

Table 5. Continued.

	1965 Duck Harvest				1966 Duck Harvest			
District & County	No. Duck Hunters	% of Total	No. Taken	% of Total	No. Duck Hunters	% of Total	No. Taken	% of Total
District 4								
Cascade	723	4.02	6,380	4.57	995	3.76	9,024	3.36
Chouteau	431	2.40	2,638	1.89	389	1.47	3,034	1.13
Fergus	242	1.35	823	.59	389	1.47	1,665	.62
Glacier	280	1.56	1,954	1.40	577	2.18	6,472	2.41
Judith Basin	46	.26	55	.04	143	.54	510	.19
Lewis & Clark	647	3.60	6,673	4.78	590	2.23	6,499	2.42
Meagher	73	.41	670	.48	129	.49	1,020	.38
Petroleum	26	.15	153	.11	26	.10	214	.08
Pondera	394	2.19	2,122	1.52	535	2.02	4,001	1.49
Teton	1,023	5.69	7,120	5.10	1,228	4.64	9,668	3.60
Toole	271	1.51	2,052	1.47	331	1.25	3,169	1.18
Total	4,156	23.14	30,640	21.95	5,332	20.15	45,276	16.86
District 5								
Bighorn	215	1.20	795	.57	259	.98	1,101	.41
Carbon	84	.47	223	.16	272	1.03	2,685	1.00
Golden Valley	26	.15	111	.08	13	.05	0	.00
Musselshell	35	.20	223	.16	84	.32	349	.13
Stillwater	93	.52	363	.26	185	.70	1,557	.58
Wheatland	26	.15	335	.24	129	.49	1,074	.40
Yellowstone	600	3.34	3,336	2.39	1,488	5.62	12,086	4.50
Total	1,079	6.03	5,386	3.86	2,430	9.19	18,852	7.02
District 6								
Blaine	224	1.25	1,312	.94	288	1.09	2,739	1.02
Daniels	35	.20	55	.04	26	.10	161	.06
Hill	572	3.18	3,671	2.63	836	3.16	7,171	2.67
Liberty	140	.78	977	.70	259	.98	2,605	.97
McCone	73	.41	488	.35	84	.32	429	.16
Phillips	338	1.88	2,038	1.46	723	2.73	4,055	1.51
Richland	64	.36	139	.10	185	.70	1,316	.49
Roosevelt	120	.67	474	.34	214	.81	1,745	.65
Sheridan	498	2.77	3,713	2.66	606	2.29	7,278	2.71
Valley	280	1.56	1,465	1.05	635	2.40	4,673	1.74
Total	2,344	13.06	14,332	10.27	3,856	14.58	32,172	11.98
District 7								
Carter	64	.36	376	.27	100	.38	134	.05
Custer	64	.36	390	.28	158	.60	617	.23
Dawson	46	.26	83	.06	143	.54	483	.18
Fallon	35	.20	55	.04	26	.10	26	.01
Garfield	26	.15	97	.07	0	.00	0	.00
Powder River	8	.05	0	.00	13	.05	214	.08
Prairie	35	.20	167	.12	55	.21	80	.03
Rosebud	84	.47	83	.06	113	.43	671	.25
Treasure	35	.20	167	.12	71	.27	268	.10
Wibaux	0	.00	0	.00	0	.00	0	.00
Total	397	2.25	1,418	1.02	679	2.58	2,493	.93
Unknown	1,108	6.16	7,008	5.02	1,546	5.84	10,125	3.77

The district and county goose harvest data for the 1965 and 1966 seasons are shown in Table 6.

The goose seasons between the two years were similar in all areas. The five counties having the largest goose harvest in order of magnitude are as follows: Pondera, Phillips, Teton, Lake and Madison.

Table 6. Calculated Goose Harvest in Game Management Districts and Counties 1965 and 1966.

	1965 Goose Harvest				1966 Goose Harvest			
District & County	No. Goose Hunters	% of Total	No. Taken	% of Total	No. Goose Hunters	% of Total	No. Taken	% of Total
District 1								
Flathead	736	6.87	467	4.45	969	6.72	742	5.31
Lake	1,076	10.05	966	9.20	1,476	10.24	1,218	8.71
Lincoln	55	.52	113	1.08	144	1.00	43	.31
Sanders	169	1.58	113	1.08	390	2.71	325	2.33
Total	2,036	19.02	1,659	15.81	2,979	20.67	2,328	16.66
District 2								
Deer Lodge	151	1.41	134	1.28	144	1.00	43	.31
Granite	47	.44	19	.19	43	.30	58	.42
Mineral	18	.17	19	.19	28	.20	13	.10
Missoula	188	1.76	61	.59	331	2.30	132	.95
Powell	18	.17	0	.00	57	.40	74	.53
Ravalli	245	2.29	103	.99	477	3.31	148	1.06
Total	667	6.24	336	3.24	1,080	7.51	468	3.37
District 3								
Beaverhead	273	2.55	103	.99	331	2.30	58	.42
Broadwater	207	1.94	113	1.08	216	1.50	281	2.01
Gallatin	207	1.94	61	.59	361	2.51	148	1.06
Jefferson	55	.52	9	.09	100	.70	13	.10
Madison	925	8.64	945	9.00	1,085	7.53	996	7.12
Park	302	2.82	197	1.88	230	1.60	74	.53
Sweet Grass	8	.08	0	.00	158	1.10	58	.42
Silver Bow	75	.70	30	.29	14	.10	0	.00
Total	2,052	19.19	1,458	13.92	2,495	17.34	1,628	11.66
District 4								
Cascade	396	3.70	405	3.86	520	3.61	475	3.40
Chouteau	320	2.99	800	7.62	274	1.90	207	1.48
Fergus	112	1.05	103	.99	115	.80	148	1.06
Glacier	216	2.02	197	1.88	506	3.51	951	6.80
Judith Basin	8	.08	0	.00	14	.10	0	.00
Lewis & Clark	396	3.70	405	3.86	288	2.00	222	1.59
Meagher	18	.17	9	.09	0	.00	0	.00
Petroleum	8	.08	0	.00	57	.40	43	.31
Pondera	263	2.46	311	2.97	405	2.81	1,337	9.56
Teton	594	5.55	602	5.74	868	6.02	1,277	9.13
Toole	151	1.41	40	.39	129	.90	162	1.16
Total	2,482	23.21	2,872	27.40	3,176	22.05	4,822	34.49

Table 6. Continued.

	1965 Goose Harvest				1966 Goose Harvest			
District & County	No. Goose Hunters	% of Total	No. Taken	% of Total	No. Goose Hunters	% of Total	No. Taken	% of Total
District 5								
Bighorn	235	2.20	269	2.57	187	1.30	43	.31
Carbon	27	.26	9	.09	86	.60	29	.21
Golden Valley	37	.35	19	.19	0	.00	0	.00
Musselshell	27	.26	113	1.08	43	.30	0	.00
Stillwater	27	.26	0	.00	100	.70	43	.31
Wheatland	0	.00	0	.00	43	.30	0	.00
Yellowstone	330	3.08	165	1.58	636	4.41	296	2.12
Total	683	6.41	575	5.51	1,095	7.61	411	2.95
District 6								
Blaine	292	2.73	280	2.67	230	1.60	267	1.91
Hill	302	2.82	201	2.87	346	2.40	698	4.99
Liberty	178	1.67	509	4.85	173	1.20	207	1.48
McCone	27	.26	19	.19	43	.30	88	.63
Phillips	575	5.37	1,039	9.90	1,201	8.33	1,337	9.56
Richland	27	.26	0	.00	43	.30	0	.00
Roosevelt	65	.61	19	.19	43	.30	13	.10
Sheridan	339	3.17	238	2.27	419	2.91	772	5.52
Valley	159	1.49	123	1.18	144	1.00	88	.63
Total	1,964	18.38	528	24.12	2,642	18.34	3,470	24.82
District 7								
Carter	18	.17	0	.00	14	.10	0	.00
Custer	55	.52	301	2.87	144	1.00	43	.31
Dawson	47	.44	9	.09	72	.50	29	.21
Fallon	8	.08	0	.00	0	.00	0	.00
Garfield	18	.17	30	.29	0	.00	0	.00
Powder River	0	.00	0	.00	14	.10	13	.10
Prairie	27	.26	9	.09	43	.30	0	.00
Rosebud	141	1.32	165	1.58	115	.80	267	1.91
Treasure	84	.79	134	1.28	86	.60	13	.10
Total	398	3.75	648	6.20	488	3.40	365	2.63
Unknown	367	3.43	331	3.16	419	2.91	444	3.18

Comparison of Harvest Characteristics Between The Two Flyways in Montana

A comparison of the resident hunters performance during the 1965 and 1966 seasons between flyways is shown in Table 7.

Table 7. Montana Waterfowl Hunter Activity and Harvest in The Pacific and Central Flyway During The 1965 and 1966 Seasons.

	1965		1966	
	Pacific	Central	Pacific	Central
% of total duck hunters	75.0	25.0	78.59	21.41
% of total duck harvest	83.8	16.2	69.23	30.77
No. days hunted ducks	5.94	5.04	7.04	5.44
Seasonal duck bag	8.27	4.80	11.50	7.05
% of total goose hunters	71.0	29.0	68.88	31.12
% of total goose harvest	66.6	33.4	70.99	29.01
No. days hunted geese	4.27	4.60	5.37	4.54
Seasonal goose bag	0.84	1.17	.97	.97

The 1966 reported duck harvest by time periods is shown in Table 8.

Table 8. Comparative Distribution of The 1966 Reported Duck Harvest by Time Periods and Flyways.

	Pacific Flyway			Central Flyway	
Periods	No. Ducks	%	Periods	No. Ducks	%
Oct. 8 - Oct. 23	3,022	23.8	Oct. 8 - Oct. 16	647	19.5
Oct. 24 - Nov. 13	2,555	20.1	Oct. 17 - Oct. 30	766	23.0
Nov. 14 - Dec. 4	2,924	23.0	Oct. 31 - Nov. 13	739	22.2
Dec 5 - Dec. 25	2,637	20.9	Nov. 14 - Nov. 27	750	22.5
Dec. 26 - Jan. 8	1,551	12.2	Nov. 28 - Dec. 6	425	12.8
Total	12,689			3,327	

The species composition of the duck harvest is compared between flyways and years in Table 9.

In the Pacific Flyway there was little or no change in the species composition. In the Central Flyway there was an increase in the mallard harvest, probably due to regulations. The 1966 waterfowl hunting regulations were more liberal in the Central Flyway as compared to 1965.

Table 9. Percentage Composition of The Duck Species Harvested During The 1965 and 1966 Hunting Season by Flyways in Montana.

Species	1965 Pacific	1965 Central	1966 Pacific	1966 Central
Mallard	77.6	64.5	76.3	72.9
Blue-winged Teal	6.0	9.4	5.0	7.0
Pintail	2.8	4.5	3.9	3.3
Baldpate	1.7	1.9	2.1	1.1
Gadwall	1.2	2.3	1.4	2.3
Scaup	1.4	1.7	1.1	1.2
Shoveller	.7	3.0	1.3	1.7
Canvasback	1.0	3.7	1.3	2.8
Redhead	.2	.6	.7	1.2
Unknown	6.7	7.9	6.5	6.1

The species composition of the goose harvest between flyways and years is compared in Table 10.

The composition is very similar for the Central Flyway. In the Pacific Flyway, there is a significant difference in the composition. This was caused by the extreme difference in the hatch of snow geese between the two years. In 1965 the snow goose hatch was one of the lowest on record, where in 1966 it was one of the best on record.

Table 10. Percentage Composition of The Goose Species Harvested During The 1965 and 1966 Hunting Seasons by Flyways.

	1965 Pacific	1965 Central	1966 Pacific	1966 Central
Canada Goose	83.2	94.9	58.0	90.1
Snow Goose	12.8	2.9	33.6	4.3
White-Fronted Goose	.8	.5	5.8	2.4
Ross's Goose	.4	.0	1.9	.0
Unknown	2.5	1.4	.4	2.5

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DATE August 15, 1967

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